terday a flock of fish ducks sat on the ice over what was an air-hole the day before, and consequently covered with thin, transparent ice. Whether they saw minnows and perch swimming underneath I don't know, but they were motionless for an hour or more. Sailors say the lake is frozen across to Michigan, but that idea is nonsense and is exploded by the fact that my "pillar of cloud" is over the eastern horizon just the same, which it would not be but for open water.

REMARKABLE METEORS.

By Lieut. FRANK H. SCHOFIELD, U. S. Navy.

The following report, as kindly communicated by the editor of the Pilot Chart, is dated U. S. S. *Supply*, at sea, latitude 36° 20′ north; longitude 127° 36′ west, February 28, 1904:

1. I have the honor to report that three somewhat remarkable meteors were observed from this ship at 6:10 a. m. (Greenwich mean time 3 hours 12 minutes) February 28, 1904, in latitude 35° 58′ north, longitude 128° 36′ west.

2. The meteors appeared near the horizon and below the clouds, traveling in a group from northwest by north (true) directly toward the ship. At first their angular motion was rapid and color a rather bright red. As they approached the ship they appeared to soar, passing above the clouds at an elevation of about 45°. After rising above the clouds their angular motion became less and less until it ceased, when they appeared to be moving directly away from the earth at an elevation of about 75° and in direction west-northwest (true). It was noted that the color became less pronounced as the meteors gained in angular elevation.

3. When sighted, the largest meteor was in the lead, followed by the second in size at a distance of less than twice the diameter of the larger, and then by the third in size at a similar distance from the second in size. They appeared to be traveling in echelon, and so continued as long as in sight.

4. The largest meteor had an apparent area of about six suns. It was egg-shaped, the sharper end forward. This end was jagged in outline. The after end was regular and full in outline.

5. The second and third meteors were round and showed no imperfections in shape. The second meteor was estimated to be twice the size of the sun in appearance, and the third meteor about the size of the sun.

6. When the meteors rose there was no change in relative positions; nor was there at any time any evidence of rotation or tumbling of the larger meteor.

7. I estimated the clouds to be not over one mile high.

8. The near approach of these meteors to the surface and the subsequent flight away from the surface appear to be most remarkable, especially so as their actual size could not have been great. That they did come below the clouds and soar instead of continuing their southeasterly course is also equally certain, as the angular motion ceased and the color faded as they rose. The clouds in passing between the meteors and the ship completely obscured the former. Blue sky could be seen in the intervals between the clouds.

9. The meteors were in sight over two minutes and were carefully observed by three people, whose accounts agree as to details. The officer of the deck, Acting Boatswain Frank Garvey, U. S. Navy, sighted the meteors and watched them until they disappeared. He sent a messenger to me who brought an unintelligible message. When I arrived on the bridge the meteors had been obscured for about one-half of a minute.

PRECIPITATION FOR TWENTY-NINE YEARS AT DODGE CITY, KANS.

By E. D. EMIGH, Official in Charge.

In studying the adaptability of a climate to the requirements of any particular crop, only the data for the germinating and growing season should be considered. It is not an uncommon mistake to base conclusions upon figures showing the total precipitation and mean temperature of the entire year, whereas, the applicable data probably covers a period of not over six months. For facility in this work, figures for each month and each quarter of the calendar year have been compiled.

Amounts of moisture that would not be sufficient to be of great practical value in the hot months are frequently of very great importance when received by the soil at a more favorable season. Heavy snow slowly melted, or a gradual soaking rain at a time of comparatively inactive evaporation, is more beneficial by far than the heavy downpours so common to the summer months. In this connection it is interesting to note that the large wheat yields of 1892 and 1903, in Ford County, were produced under conditions of deficient rainfall, not only for the year, but for the crop season as well. In both instances the soil was blessed with an unusually abundant supply of moisture early in the season, and was subsequently benefited by timely rainfall.

After a careful investigation of the records of this station, published herewith, and of the records of the western third of the State for sixteen years, we feel justified in making the statement that there is no foundation in fact for the assertion that the rainfall in western Kansas is increasing from year to year.

Precipitation, Dodge City, Kans.

Year.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Annually.
	Inch.	*Inch.*	*Inch.*	*Inch.*	*Inch.*
1874	.....	.....	.....	0.56	.....
1875	0.26	3.70	6.66	0.15	10.77
1876	3.64	3.84	5.42	2.50	15.40
1877	0.99	12.26	6.38	8.26	27.89
1878	2.35	7.88	6.85	0.88	17.96
1879	1.12	5.70	8.45	0.16	15.43
1880	0.04	5.03	9.49	3.88	18.44
1881	2.28	16.97	10.55	3.75	33.55
1882	0.98	6.03	4.26	1.84	13.14
1883	2.28	12.12	9.59	4.51	28.50
1884	2.27	13.21	11.45	3.43	30.36
1885	1.74	7.48	11.31	3.18	23.71
1886	3.78	7.77	6.86	0.94	19.35
1887	0.77	10.15	3.42	1.37	15.71
1888	1.89	12.10	7.85	1.10	22.94
1889	3.41	7.09	5.02	3.65	19.17
1890	0.86	5.09	4.24	1.53	11.72
1891	4.57	12.39	11.08	4.30	32.34
1892	3.88	6.97	6.39	2.42	19.66
1893	0.36	2.11	6.88	0.77	10.12
1894	1.47	5.63	4.23	1.27	12.60
1895	4.15	7.20	7.32	1.64	20.31
1896	0.74	8.61	7.20	3.32	19.87
1897	4.08	7.01	7.57	2.92	21.58
1898	2.68	15.85	8.56	4.37	31.46
1899	0.75	13.22	8.77	5.71	28.45
1900	1.74	8.90	9.02	1.10	20.76
1901	1.41	7.83	5.06	1.76	16.06
1902	2.08	6.60	5.95	3.07	17.70
1903	3.62	6.34	2.95	2.36	15.27
Averages:					
Rainfall	2.07	8.45	7.19	2.64	20.35
Rainy days	16	25	20	14	75
Temperature	34°	64°	74°	43°	54°

A rainy day is one with 0.01 of an inch or more of precipitation.

Total amount in the wettest year, 33.35 inches in 1881.

Total amount in the driest year, 10.12 inches in 1893.

Total in the wettest first quarter year, 4.57 inches in 1891.

Total amount in the driest first quarter, 0.04 inch in 1880.

Total in the wettest second quarter year, 16.97 inches in 1881.

Total in the driest second quarter year, 2.11 inches in 1893.

Total in the wettest third quarter year, 11.45 inches in 1884.

Total in the driest third quarter year, 2.95 inches in 1903.

Total in the wettest fourth quarter year, 8.26 inches in 1877.

Total in the driest fourth quarter year, 0.15 inch in 1875.

Wettest month was May, 1881, with 12.82 inches.

Driest month was December, 1889, with none.

Greatest average monthly number of rainy days, 10 in June.

Least average monthly number of rainy days, 4 in January and November.

Temperature: Annual mean, 54°; warmest month is July, with an average of 78°; coldest month is January, with an average of 28°.

Though the successive periods from the sowing to the maturing of winter wheat overlap to a certain extent, in this region they conform quite closely to the calendar quarters, and it is mainly on this account that this division of the year was selected for the above table. The fact that the growing season for our principal spring crops, oats and barley, ends late in June or early in July also makes this method more desirable for the study of climate and crops than the seasonal division of the so-called meteorological year.

To summarize in a brief and general way, July, August, and